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(54) **Flavoring with 4-methyl-4-  
mercapto-2-pentanone**

(57) 4-methyl-4-mercapto-2-pentanone is used as a flavor additive for foodstuffs and particularly coffee. It imparts a "catty fruity" flavor note to imitation coffee beverages & other foodstuffs.

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## SPECIFICATION

## Flavoring with 4-methyl-4-mercapto-2-pentanone

5 *Technical Field* 5

The invention relates to flavor agents in general. More particularly the invention relates to a chemical compound or composition which has been found to have utility in the alteration of flavor or flavor characteristics of foodstuffs, whether naturally occurring or synthetic.

10 *Background Art* 10

In the food industry there is a constant demand for additives capable of imparting, supplementing or improving the flavor of foodstuffs. It is common in some segments of the industry to add flavor agents to enhance or bring out a desirable flavor characteristic in products and by so doing to render the product more desirable from a consumer preference standpoint.

## 15 This is especially true where food technologists seek to imitate a natural flavor by selecting a flavor enhancing substance or combination of such substances. The technology of flavor synthesis and blending of various flavor elements to achieve certain desirable results is of great commercial importance. 15

20 *Disclosure of the Invention* 20

The present invention involves adding as a flavoring composition an effective amount of the compound 4-methyl-4-mercapto-2-pentanone having the formula



## 30 to foodstuffs to impart to said foodstuffs a "catty, fruity" flavor note. As used in this context foodstuffs include foods and beverages for human consumption. 30

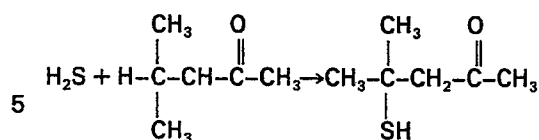
This flavor agent of this invention is of particular importance and usefulness in the modification, alteration or enhancement of the flavor of coffee beverages made from soluble coffee or in a synthetic instant beverage formulated to imitate the flavor and aroma of coffee.

## 35 Coffee flavor and aroma are difficult ones to reproduce and attempts to reproduce these necessitate a combination of many flavor compounds. While it may be characterized by terms which are not directly related to coffee flavors, the flavoring compound of this invention when used in a more complex formulation, will contribute a valuable flavor note to the overall flavor and aroma of the final product. 35

## 40 The flavoring composition, 4-methyl-4-mercapto-2-pentanone, can be effectively used at a level ranging from 0.01 to 0.4 parts per billion (ppb) on an as-consumed basis. The preferred level of incorporation is approximately 0.04 to 0.08 ppb. The flavor imparted by the composition at these levels is best described as "catty, fruity" and it will impart these notes to the beverage. "Catty" as a flavor note describes a cat urine odor. When added to the coffee or 45 simulated coffee beverage in combination with other synthetic components, it provides a balanced flavor in which the "catty, fruity" note participates but does not stand out. 45

## The flavor agent of this invention may be added at a convenient step in the soluble coffee process such as plating the dried soluble coffee or coffee substitute with a desired dilution of the flavor agent in an acceptable solution followed by drying. In certain instances the agent may be added directly to a concentrated coffee extract and the mixture dried into a soluble coffee product which contains the flavor agent as an integral part thereof. Other methods of incorporation of the flavor agent will suggest themselves to those skilled in the art and may, of course, be used without departing from the inventive concept, which may be described as being a composition of matter comprising a combination of a soluble coffee product, or imitation 50 coffee product, however prepared, whether liquid or solid, concentrated or dilute, which contains combined therewith a minor, but flavor modifying amount, of the flavor agent as described herein. 55

## 60 The flavoring composition, 4-methyl-4-mercapto-2-pentanone can be prepared according to known methods, e.g. by the addition of hydrogen sulfide to mesityloxide, the reaction scheme of which is set forth below: 60



### Best Mode for Carrying Out the Invention

The following examples are provided as illustration of the preparation and application of the flavoring composition of this invention.

#### EXAMPLE 1

Preparation of 4-methyl-4-mercapto-2-pentanone. To a high pressure vessel (Paar Bomb) is added 40 ml. of mesityl oxide and 5 ml. of triethylaniline. This mixture is cooled to  $-78^\circ\text{C}$  by external cooling in a dry ice-acetone bath. To the cooled Paar Bomb is added 30 ml. of condensed hydrogen sulfide ( $-78^\circ\text{C}$ ). The vessel is sealed and allowed to stand overnight at room temperature with internal pressure reaching 150 psi. After 16 hours the vessel is vented, the liquid reaction mixture removed and distilled under reduced pressure giving 22 ml. of the desired product, 4-methyl-4-mercapto-2-pentanone.

#### EXAMPLE II

The 4-methyl-4-mercapto-2-pentanone produced according to Example 1 was included in a synthetic coffee enhancer system which was incorporated into a soluble coffee product. The synthetic coffee enhancer system was made up of the following ingredients expressed on a percentage basis.

#### Synthetic Coffee Enhancer Ingredient

#### Percentage

2-Nonenol	8.811
2-isobutyl-3-methoxy pyrazine	0.440
Furfuryl mercaptan	88.106
4-methyl-4-mercapto-2-pentanone	2.643
	100.000%

2.27 micrograms of this formula and 10 grams of instant coffee were mixed with boiling water thereby producing one liter of coffee beverage. The level of 4-methyl-4-mercapto-2-pentanone in the coffee beverage as-consumed was 0.06 ppb.

### CLAIMS

1. A process for imparting or enhancing a "catty, fruity" flavor in a foodstuff comprising adding an amount of 4-methyl-4-mercapto-2-pentanone effective to impart or enhance said flavor.
2. The process of claim 1 wherein said effective amount is within the range of 0.01 to 0.4 parts per billion of the foodstuff on an as-consumed basis.
3. The process of claim 2 wherein said effective amount is approximately 0.04 to 0.08 parts per billion.
4. The process of any one of claims 1 to 3 wherein the foodstuff is a beverage.
5. The process of claim 4 wherein the beverage is coffee or an imitation coffee beverage.
6. A foodstuff comprising an amount of 4-methyl-4-mercapto-2-pentanone effective to impart or enhance a "catty, fruity" flavor in the foodstuff.
7. The foodstuff of claim 6 wherein the effective amount is within the range of 0.01 to 0.4 parts per billion of the foodstuff on an as-consumed basis.
8. The foodstuff of claim 7 wherein the effective amount is approximately 0.04 to 0.08 parts per billion.
9. The foodstuff of any one of claims 6 to 8 wherein the foodstuff is a beverage.
10. The foodstuff of claim 9 wherein the beverage is coffee or an imitation coffee beverage.
11. A foodstuff in accordance with claim 6 substantially as hereinbefore described in the Examples.
12. A process for imparting or enhancing a flavor in a foodstuff substantially as hereinbefore described with particular reference to the Examples.
13. A foodstuff produced by a process according to any one of claims 1 to 5.

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